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[DOCUMENT NAME] ABSTRACT OF THE DISCLOSURE

[Abridgment]

[Object] It is an object of the present invention to provide a method and apparatus which can be applied for acquiring a three-dimensional image of an object and detect three-dimensional information pertaining to the object real time within a period of time corresponding to the frame of a video signal.

[Means for Achieving the Object] An image of an object illuminated by illumination light having given intensity is formed as an optical image. The distance between respective points of the object is determined on the basis of a video which is obtained by acquiring the optical image with a given image pick-up gain. Here, either the intensity of the illumination light or the image pick-up gain is changed with time. The distribution of intensity of the image acquired by utilization of such intensity or image pick-up gain reflects a time lag between the time at which the illumination light is emitted from a light source and the time at which the light reflected from individual points of the object reaches an image pick-up device. The distribution of intensity includes information pertaining to the distance between the light source and the respective points of the object. The present invention enables detection of three-dimensional information at a speed at which the three-dimensional information can be followed real time within a period of time corresponding to the frame of the video signal.

[Characteristic Drawing] FIG. 1